APPENDIX TO THE
IHS 2002 PERFORMANCE PLAN

A.1 Approach to Performance Measurement

Data Verification and Validation

In the context of GPRA the concepts of data validation and verification are defined as:

> **Validation** is the process for ensuring that data collected match the intended area of performance.

> **Verification** is the assessment of data completeness, accuracy, consistency and timeliness and related quality control practices.

For each performance indicator in this performance plan, the issue of validation is directly addressed in the "Rationale" section that comes immediately after the statement of the indicator. Where ever possible we have attempted to use an evidence-base justification for the selection of the indicator, particularly for clinical care related indicators.

How we address the issue of data verification, however, is considerably more diverse in this plan because of the diversity of types of data that support the indicators. The verification of many of the clinically based performance indicators is supported by either the IHS Automated Data System or the IHS Diabetes Care and Outcomes Audit. The verification of data from these sources is described in the three sections that immediately follow and support indicators 1-8, 12, 13, 18, 22-24, 26, 29.

For the Capital Programming/Infrastructure Indicators 34-36, the data are recorded at the local level where projects are conceptualized based in strict protocols and formulas. These data are compiled at the Area and Headquarters level and reviewed for accuracy and then compare against similar projects. The validation and verification of this information is essential to the facilities programs since it is used to distribute resources as well as measure performance.

For indicators that survey our consumers (indicators 21 and 37), the required Paperwork Reduction Act clearance process effectively addresses both validation and verification process as required in submitting the instrument and collection protocol. We are using a similar recognized survey approach to assess Indicator 16 addressing surveys of our health care providers relative to the adoption of policies and procedures for screening and referral for victims of family violence, abuse, or neglect, and staff training that support these policies. Similarly, Indicator 42, which addresses the quality of work life, is collected by HHS staff through recognized survey procedures.

The remaining indicators in this plan are process measures for which verification is less formalized but relatively evident from the description of how the indicators are addressed. In essence they are based on the integrity of IHS reporting structures. As an example, Indicator 20 addressing health facility accreditation, depends on the reports of the accrediting bodies submitted to the sites and Areas, forwarded to IHS Headquarters and reported in this document.

Data Sources to Describe the AI/AN Population
The IHS utilizes outside (non-IHS) and IHS data sources to manage its diverse programs and assess Indian health status. The two principal outside data sources are the Bureau of the Census and the Centers for Disease Control and Prevention, in particular, the National Center for Health Statistics (NCHS). The Census Bureau is the source of Indian population counts and social and economic data. However, reliable Indian census data at the county level are only available from the Decennial Census, once every 10 years. The IHS prepares AI/AN population estimates for years between the Censuses.

The NCHS provides IHS with natality and mortality files that contain all births and deaths for USA residents, including those identified as American Indian or Alaska Native. The NCHS obtains birth and death records from the State departments of health, based on information reported on official State birth and death certificates. The IHS receives these records with essentially the same basic demographic information as the records maintained by NCHS, but with names, addresses, and record identification numbers deleted as required by the Privacy Act. It should also be noted that tribal identity is not recorded in these records by the States. The State of New Mexico does identify tribal affiliation for 23 indigenous tribes of that state. However, the IHS does not obtain this tribal identification from the automated records provided by NCHS. The data are subject to the degree of accuracy of reporting by the States to NCHS. The NCHS does perform numerous edit checks and imputes values for non-responses. The IHS assigns IHS organizational (Area and service unit) identifiers to the birth and death records in setting up its Indian database. The IHS computer routines for accomplishing this have been thoroughly verified, and the results are continuously monitored.

Several studies have shown considerable miscoding of Indian race on State death certificates, understating Indian mortality especially in areas not associated with Indian reservations. The IHS now utilizes factors based on a National Death Index study to adjust Indian mortality rates for race miscoding. Another major problem with mortality data is the time lag in receiving data. These data are not typically available from NCHS until two years after the events occur, and mortality data are often slow in showing the impact of health interventions. Due to these constraints, IHS has chosen not to use mortality data for annual performance plan indicators except in special circumstances. The IHS will continue to use mortality data for tracking long-term trends in Indian health status and to make comparisons with other population groups. However, having to wait two years to link activities in an annual performance plan with mortality findings is of limited value in the ongoing implementation and evaluation process.

IHS Automated Data Systems
The IHS has its own program information systems to collect data on the services provided by IHS and tribal direct and contract programs. The software used by IHS facilities and most tribal facilities is the Resource and Patient Management System (RPMS). In addition the IHS provided the file structure and technical assistance to a number of tribes to facilitate reporting of data in RPMS from non-RPMS sources. As a result, it is estimated that this data set accounts for approximately 90 percent of the IHS user-population.

Data are collected for each inpatient discharge, ambulatory medical visit, and dental visit (all patient specific) and for community health service programs including health education, community health representatives, environmental health, nutrition, public health nursing, mental health and social services, and substance abuse (all activities reporting systems).

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The patient-specific data are collected through the Patient Care Component (PCC) of the RPMS. These data are subject to recording, inputting, and transmission errors.
However, IHS applies a series of edits at the facility and central database levels to detect and correct invalid data. Some examples include the following: when ICD-9 and CPT-4 data is input into RPMS, edit checks are conducted for sex, age, and diagnosis to prevent data from being processed that could not be true; the Medical Record supervisors have access to the medical records reports which provide the capability to check the data entered for completeness (e.g., does each visit have a provider, date of service, etc.) and flags the entries that should be edited; and when records are flagged for export, the PCC Export routine has edit checks to prevent transmission of records with incomplete data elements.

At the central database level when data is processed, additional edit checks are applied to ensure that the validity of data sorts. For example, if a report requires the gender and if the gender field is not 'male' or 'female', that record is not used. Reports are also assessed for linearity (is the data consistent month to month) and completeness (how it compares to last year) prior to sending data for review and approval. Others that cannot be detected by computer are identified through the monitoring for reasonableness that is performed in the field, and by Area and Headquarters health program staff.

Each facility that utilizes PCC has a facility-level database that contains the detailed PCC data collected at that site. A subset of the detailed PCC data (to meet the routine information needs of IHS Headquarters) is transmitted to the IHS central database. The PCC data are the source of most of IHS' GPRA measures since they reflect prevention activities and morbidity and do not have the time lags described previously for mortality data. However, many of IHS' proposed measures rely on detailed PCC data not currently transmitted to the IHS central database. The IHS is developing software to transmit some of these needed data items to the central database. In the meantime, IHS will need to use sampling routines to collect the required data from the individual facility-level databases. A stratified sampling approach will be used to include different types and sizes of facilities and Indian populations with different health characteristics.

Early in the process of attempting to compile FY 2000 reports for several indicators based on our automated patient record data system, several unforeseen data problems emerged. As part of our Y2K conversion efforts in 1999, the IHS retired the obsolete mainframe computing platform that was used to aggregate Indian Health Service supported health care data nationally and prepare statistical reports, which are used to report on GPRA indicators. The conversion efforts successfully addressed the Y2K date change issue but proved to be challenging when migrating existing data and duplicating the complex set of algorithms used to aggregate data from decentralized collection points. When the database was transitioned from the mainframe to IBM RS/6000 minicomputers there were incompatibilities between the configuration of the database (Informix) and the IBM High Availability hardware configuration that resulted in data being lost during report generation or the verification processes were not fully functional.

Intensive efforts have since been focused on procedures to reestablish the essential report generating capabilities and ultimately improve data quality. Many of the problems have been addressed by moving the database to the IBM Database 2. Due to hard drive failures, space limitations and equipment upgrades annual report verification was delayed. All of these hardware/equipment issues will be completely addressed by the end of March 2001.
Additionally, there are issues with duplicate patient data and complete export of data from field

sites. The Master Person Index and Data Movement projects should eliminate most of these problems sometime in FY2002.

There are currently workgroups formed (with IHS Direct, Tribal and Urban staff) to address issues of workload reporting, algorithm/formula review, data entry/coding, equity, etc. Within the next year, these groups will develop solutions to improve the quality and timeliness of our data. This has been and is a challenging process requiring a high level of coordination and cooperation between the local I/T/Us, Areas and to Headquarters.

The combination of improvements in the information technology architecture and the program improvements will ultimately improve the quality and availability of data. Current efforts are focused on securing data for indicator 26 not yet reported and on final data validation and verification for six other indicators (Indicators 1, 6-8,13 and 22). We are confident these technical set backs will be resolved and we remain committed to improving the processes for generating and making GPRA and other accountability data a major focus of our information technology development path.

IHS Diabetes Care and Outcomes Audit
A final important data set that underpins the diabetes treatment indicators 2-5 is the IHS Diabetes Care and Outcomes Audit. Since 1986 a yearly medical record review to assess diabetes care has been conducted in more than 75% of the IHS and tribal facilities, representing care to nearly 70,000 AI/AN people with diabetes. The medical staff at participating facilities are encouraged to maintain active diabetes registries using uniform definitions. Each registry is maintained in the IHS medical record system and includes information about individuals with diagnosed diabetes who have been seen at least once in the past three years. Each year a systematic random sample is drawn from each facility's registry, using a sample size sufficient to provide estimates of $\pm 10\%$ of the true rates of adherence for that facility with a confidence of >90%.

The medical record review measures selected clinical interventions, performance measures, and intermediate outcomes using the uniform set of definitions. The Area diabetes consultants conduct chart reviews and other professional staff trained by them in accordance with written instructions and definitions provided by the IHS Diabetes Program. The abstracted data are entered into a microcomputer-based epidemiologic software program. Summary reports are printed for immediate use by facility staff in their quality improvement and program planning Activities. Regional and national rates are constructed for each item of the medical record review after data are aggregated from all participating sites.

During the period 1995-1999, approximately150 sites submitted data to be compiled for the IHS total. Indian health facilities and tribally contracted facilities that do not provide direct patient services did not participate in the audit. Participation from each of the 12 IHS administrative regions varied by year and by federal or tribal management. All regions were represented in each year and approximately 2/3 of all the facilities contributed data in a given year. Tests of trend over the 3- year period were performed by the Mantel-Hanzel test except as noted in the text.